

SEQUENCE LISTING

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<120> NOVEL IMMUNOTHERAPY

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tta	ctg	ttc	ttc	gca	gaa	aac	cag	gat	aac	ttc	ata	tct	ctg	aac	ata	825
Leu	Leu	Phe	Phe	Ala	Glu	Asn	Gln	Asp	Asn	Phe	Ile	Ser	Leu	Asn	Ile	
	245					250					255					
gaa	gat	ggc	aat	ctc	atg	gtg	aga	tac	aaa	cta	aat	tca	gag	cca	ccc	873
Glu	Asp	Gly	Asn	Leu	Met	Val	Arg	Tyr	Lys	Leu	Asn	Ser	Glu	Pro	Pro	
260					265					270					275	
aaa	gag	aag	gga	att	cga	gac	acc	atc	aac	gat	ggg	aaa	gat	cat	tcg	921
Lys	Glu	Lys	Gly	Ile	Arg	Asp	Thr	Ile	Asn	Asp	Gly	Lys	Asp	His	Ser	
				280					285					290		
atc	tta	atc	aca	att	gga	aaa	cta	caa	aaa	cgc	atg	tggt	ata	aat	gtg	969
Ile	Leu	Ile	Thr	Ile	Gly	Lys	Leu	Gln	Lys	Arg	Met	Trp	Ile	Asn	Val	
			295					300					305			

aac gaa cgc agt gta cga atc gaa ggg gaa ata ttt gat ttc agc aca	1017
Asn Glu Arg Ser Val Arg Ile Glu Gly Glu Ile Phe Asp Phe Ser Thr	
310 315 320	
tat tat ttg ggc gga att cca att gca atc aga gaa agg ttt aac atc	1065
Tyr Tyr Leu Gly Gly Ile Pro Ile Ala Ile Arg Glu Arg Phe Asn Ile	
325 330 335	
tca acg cct gct ttc caa ggc tgc atg aag aat ctg aag aaa acc agt	1113
Ser Thr Pro Ala Phe Gln Gly Cys Met Lys Asn Leu Lys Lys Thr Ser	
340 345 350 355	
ggg gtt gtc agg ttg aat gat act gtg ggt gta acc aag aag tgc tca	1161
Gly Val Val Arg Leu Asn Asp Thr Val Gly Val Thr Lys Lys Cys Ser	
360 365 370	
gaa gac tgg aag ctt gtg cga acc gcc tgc ttc tcc aga gga ggg cag	1209
Glu Asp Trp Lys Leu Val Arg Thr Ala Ser Phe Ser Arg Gly Gly Gln	
375 380 385	
atg agc ttt aca aac ttg gac gtg ccc tgc act gac cgc ttc cag ctc	1257
Met Ser Phe Thr Asn Leu Asp Val Pro Ser Thr Asp Arg Phe Gln Leu	
390 395 400	
tcc ttt ggg ttt cag acc ttt caa ccc agt ggc aca ctg ctc aat cat	1305
Ser Phe Gly Phe Gln Thr Phe Gln Pro Ser Gly Thr Leu Leu Asn His	
405 410 415	
cag acg cgg aca agc agc ctg ctg gtc acc ctg gaa gat ggg cac att	1353
Gln Thr Arg Thr Ser Ser Leu Leu Val Thr Leu Glu Asp Gly His Ile	
420 425 430 435	
gag ttg agc act agg gac agc aac atc cca att ttc aag tct cca ggg	1401
Glu Leu Ser Thr Arg Asp Ser Asn Ile Pro Ile Phe Lys Ser Pro Gly	
440 445 450	
acc tac atg gac ggt tta ctg cat cat gta tct gta ata agt gac acc	1449
Thr Tyr Met Asp Gly Leu Leu His His Val Ser Val Ile Ser Asp Thr	
455 460 465	
tca ggt ctc cgc ctt ctc atc gat gac cag gtc ctg aga agg aac cag	1497
Ser Gly Leu Arg Leu Leu Ile Asp Asp Gln Val Leu Arg Arg Asn Gln	
470 475 480	
agg ctt cct agc ttc tct aac gcc cag cag tgc ctc cgc ctt gga gga	1545
Arg Leu Pro Ser Phe Ser Asn Ala Gln Gln Ser Leu Arg Leu Gly Gly	
485 490 495	
ggt cat ttc gag ggt tgt atc agc aat gtt tta gtc caa agg ttt tca	1593
Gly His Phe Glu Gly Cys Ile Ser Asn Val Leu Val Gln Arg Phe Ser	
500 505 510 515	
cag agt cca gaa gtc ctg gat ctg gcc agt aaa tct acc aag aag gat	1641
Gln Ser Pro Glu Val Leu Asp Leu Ala Ser Lys Ser Thr Lys Lys Asp	
520 525 530	

gca tcc cta gga ggc tgc agt tta aac aag cca cct ttt ctt atg ttg 1689
 Ala Ser Leu Gly Gly Cys Ser Leu Asn Lys Pro Pro Phe Leu Met Leu
 535 540 545

ttt aaa agt ccc aag aga ttt aac aag ggc cgg att ttc aat gtt aat 1737
 Phe Lys Ser Pro Lys Arg Phe Asn Lys Gly Arg Ile Phe Asn Val Asn
 550 555 560

cag ctg 1743
 Gln Leu
 565

<210> 4

<211> 565

<212> PRT

<213> Rattus norvegicus

<400> 4

Met Arg Phe Asn Gly Lys Ser Gly Val Glu Val Arg Leu Pro Asn Asp
 1 5 10 15

Leu Glu Asp Leu Lys Gly Tyr Thr Ser Leu Ser Leu Phe Leu Gln Arg
 20 25 30

Pro Asp Leu Arg Glu Asn Gly Gly Thr Glu Asp Met Phe Val Met Tyr
 35 40 45

Leu Gly Asn Lys Asp Ala Ser Lys Asp Tyr Ile Gly Met Ala Val Val
 50 55 60

Asp Gly Gln Leu Thr Cys Val Tyr Asn Leu Gly Asp Arg Glu Ala Glu
 65 70 75 80

Val Gln Ile Asp Gln Val Leu Thr Glu Ser Glu Ser Gln Glu Ala Val
 85 90 95

Met Asp Arg Val Lys Phe Gln Arg Ile Tyr Gln Phe Ala Lys Leu Asn
 100 105 110

Tyr Thr Lys Glu Ala Thr Ser Asn Lys Pro Lys Ala Pro Ala Val Tyr
 115 120 125

Asp Leu Glu Gly Gly Ser Ser Asn Thr Leu Leu Asn Leu Asp Pro Glu
 130 135 140

Asp Ala Val Phe Tyr Val Gly Gly Tyr Pro Pro Asp Phe Glu Leu Pro
 145 150 155 160

Ser Arg Leu Arg Phe Pro Pro Tyr Lys Gly Cys Ile Glu Leu Asp Asp
 165 170 175

Leu Asn Glu Asn Val Leu Ser Leu Tyr Asn Phe Lys Thr Thr Phe Asn
 180 185 190

Leu Asn Thr Thr Glu Val Glu Pro Cys Arg Arg Arg Lys Glu Glu Ser
 195 200 205

Asp	Lys	Asn	Tyr	Phe	Glu	Gly	Thr	Gly	Tyr	Ala	Arg	Ile	Pro	Thr	Gln	210	215	220
Pro	Asn	Ala	Pro	Phe	Pro	Asn	Phe	Ile	Gln	Thr	Ile	Gln	Thr	Thr	Val	225	230	235
Asp	Arg	Gly	Leu	Leu	Phe	Phe	Ala	Glu	Asn	Gln	Asp	Asn	Phe	Ile	Ser	245	250	255
Leu	Asn	Ile	Glu	Asp	Gly	Asn	Leu	Met	Val	Arg	Tyr	Lys	Leu	Asn	Ser	260	265	270
Glu	Pro	Pro	Lys	Glu	Lys	Gly	Ile	Arg	Asp	Thr	Ile	Asn	Asp	Gly	Lys	275	280	285
Asp	His	Ser	Ile	Leu	Ile	Thr	Ile	Gly	Lys	Leu	Gln	Lys	Arg	Met	Trp	290	295	300
Ile	Asn	Val	Asn	Glu	Arg	Ser	Val	Arg	Ile	Glu	Gly	Glu	Ile	Phe	Asp	305	310	315
Phe	Ser	Thr	Tyr	Tyr	Leu	Gly	Gly	Ile	Pro	Ile	Ala	Ile	Arg	Glu	Arg	325	330	335
Phe	Asn	Ile	Ser	Thr	Pro	Ala	Phe	Gln	Gly	Cys	Met	Lys	Asn	Leu	Lys	340	345	350
Lys	Thr	Ser	Gly	Val	Val	Arg	Leu	Asn	Asp	Thr	Val	Gly	Val	Thr	Lys	355	360	365
Lys	Cys	Ser	Glu	Asp	Trp	Lys	Leu	Val	Arg	Thr	Ala	Ser	Phe	Ser	Arg	370	375	380
Gly	Gly	Gln	Met	Ser	Phe	Thr	Asn	Leu	Asp	Val	Pro	Ser	Thr	Asp	Arg	385	390	395
Phe	Gln	Leu	Ser	Phe	Gly	Phe	Gln	Thr	Phe	Gln	Pro	Ser	Gly	Thr	Leu	405	410	415
Leu	Asn	His	Gln	Thr	Arg	Thr	Ser	Ser	Leu	Leu	Val	Thr	Leu	Glu	Asp	420	425	430
Gly	His	Ile	Glu	Leu	Ser	Thr	Arg	Asp	Ser	Asn	Ile	Pro	Ile	Phe	Lys	435	440	445
Ser	Pro	Gly	Thr	Tyr	Met	Asp	Gly	Leu	Leu	His	His	Val	Ser	Val	Ile	450	455	460
Ser	Asp	Thr	Ser	Gly	Leu	Arg	Leu	Leu	Ile	Asp	Asp	Gln	Val	Leu	Arg	465	470	475
Arg	Asn	Gln	Arg	Leu	Pro	Ser	Phe	Ser	Asn	Ala	Gln	Gln	Ser	Leu	Arg	485	490	495
Leu	Gly	Gly	Gly	His	Phe	Glu	Gly	Cys	Ile	Ser	Asn	Val	Leu	Val	Gln	500	505	510

Arg Phe Ser Gln Ser Pro Glu Val Leu Asp Leu Ala Ser Lys Ser Thr
 515 520 525

Lys Lys Asp Ala Ser Leu Gly Gly Cys Ser Leu Asn Lys Pro Pro Phe
 530 535 540

Leu Met Leu Phe Lys Ser Pro Lys Arg Phe Asn Lys Gly Arg Ile Phe
 545 550 555 560

Asn Val Asn Gln Leu
 565

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 <211> 713
 <212> DNA
 <213> Rattus norvegicus

<220>
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atg aag aat ctg aag aaa acc agt ggg gtt gtc agg ttg aat gat act 107
 Met Lys Asn Leu Lys Lys Thr Ser Gly Val Val Arg Leu Asn Asp Thr
 1 5 10 15

gtg ggt gta acc aag aag tgc tca gaa gac tgg aag ctt gtg cga acc 155
 Val Gly Val Thr Lys Lys Cys Ser Glu Asp Trp Lys Leu Val Arg Thr
 20 25 30

gcc tcg ttc tcc aga gga ggg cag atg agc ttt aca aac ttg gac gtg 203
 Ala Ser Phe Ser Arg Gly Gly Gln Met Ser Phe Thr Asn Leu Asp Val
 35 40 45

ccc tcg act gac cgc ttc cag ctc tcc ttt ggg ttt cag acc ttt caa 251
 Pro Ser Thr Asp Arg Phe Gln Leu Ser Phe Gly Phe Gln Thr Phe Gln
 50 55 60

ccc agt ggc aca ctg ctc aat cat cag acg cgg aca agc agc ctg ctg 299
 Pro Ser Gly Thr Leu Leu Asn His Gln Thr Arg Thr Ser Ser Leu Leu
 65 70 75 80

gtc acc ctg gaa gat ggg cac att gag ttg agc act agg gac agc aac 347
 Val Thr Leu Glu Asp Gly His Ile Glu Leu Ser Thr Arg Asp Ser Asn
 85 90 95

atc cca att ttc aag tct cca ggg acc tac atg gac ggt tta ctg cat 395
 Ile Pro Ile Phe Lys Ser Pro Gly Thr Tyr Met Asp Gly Leu Leu His
 100 105 110

cat gta tct gta ata agt gac acc tca ggt ctc cgc ctt ctc atc gat 443
 His Val Ser Val Ile Ser Asp Thr Ser Gly Leu Arg Leu Leu Ile Asp
 115 120 125

gac cag gtc ctg aga agg aac cag agg ctt cct agc ttc tct aac gcc 491
 Asp Gln Val Leu Arg Arg Asn Gln Arg Leu Pro Ser Phe Ser Asn Ala
 130 135 140

 cag cag tcg ctc cgc ctt gga gga ggt cat ttc gag ggt tgt atc agc 539
 Gln Gln Ser Leu Arg Leu Gly Gly Gly His Phe Glu Gly Cys Ile Ser
 145 150 155 160

 aat gtt tta gtc caa agg ttt tca cag agt cca gaa gtc ctg gat ctg 587
 Asn Val Leu Val Gln Arg Phe Ser Gln Ser Pro Glu Val Leu Asp Leu
 165 170 175

 gcc agt aaa tct acc aag aag gat gca tcc cta gga ggc tgc agt tta 635
 Ala Ser Lys Ser Thr Lys Lys Asp Ala Ser Leu Gly Gly Cys Ser Leu
 180 185 190

 aac aag cca cct ttt ctt atg ttg ttt aaa agt ccc aag aga ttt aac 683
 Asn Lys Pro Pro Phe Leu Met Leu Phe Lys Ser Pro Lys Arg Phe Asn
 195 200 205

 aag ggc cgg att ttc aat gtt aat cag ctg 713
 Lys Gly Arg Ile Phe Asn Val Asn Gln Leu
 210 215

<210> 6
 <211> 218
 <212> PRT
 <213> Rattus norvegicus

<400> 6
 Met Lys Asn Leu Lys Lys Thr Ser Gly Val Val Arg Leu Asn Asp Thr
 1 5 10 15

 Val Gly Val Thr Lys Lys Cys Ser Glu Asp Trp Lys Leu Val Arg Thr
 20 25 30

 Ala Ser Phe Ser Arg Gly Gly Gln Met Ser Phe Thr Asn Leu Asp Val
 35 40 45

 Pro Ser Thr Asp Arg Phe Gln Leu Ser Phe Gly Phe Gln Thr Phe Gln
 50 55 60

 Pro Ser Gly Thr Leu Leu Asn His Gln Thr Arg Thr Ser Ser Leu Leu
 65 70 75 80

 Val Thr Leu Glu Asp Gly His Ile Glu Leu Ser Thr Arg Asp Ser Asn
 85 90 95

 Ile Pro Ile Phe Lys Ser Pro Gly Thr Tyr Met Asp Gly Leu Leu His
 100 105 110

 His Val Ser Val Ile Ser Asp Thr Ser Gly Leu Arg Leu Leu Ile Asp
 115 120 125

 Asp Gln Val Leu Arg Arg Asn Gln Arg Leu Pro Ser Phe Ser Asn Ala
 130 135 140

15

Gln Gln Ser Leu Arg Leu Gly Gly Gly His Phe Glu Gly Cys Ile Ser
145 150 155 160
Asn Val Leu Val Gln Arg Phe Ser Gln Ser Pro Glu Val Leu Asp Leu
165 170 175
Ala Ser Lys Ser Thr Lys Lys Asp Ala Ser Leu Gly Gly Cys Ser Leu
180 185 190
Asn Lys Pro Pro Phe Leu Met Leu Phe Lys Ser Pro Lys Arg Phe Asn
195 200 205
Lys Gly Arg Ile Phe Asn Val Asn Gln Leu
210 215

<210> 7
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 7
aattaaccct cactaaaggg 20

<210> 8
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 8
taatacgact cactataggg 20

<210> 9
<211> 21
<212> DNA
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<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 9
ccagactact gtggacagag g 21

<210> 10
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 <212> DNA
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<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 10
 aaggggtcctt cgtgtgtagg g 21

<210> 11
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 11
 ctactcaacc aaatgctccc 20

<210> 12
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 12
 gtactattca acctgacaac cc 22

<210> 13
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 13
 gactgggtcc aattgacaag c 21

<210> 14
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 14

gcaaattggca ttctgacatc c

21